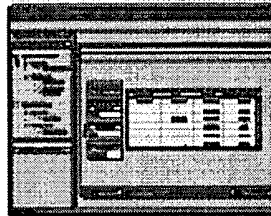
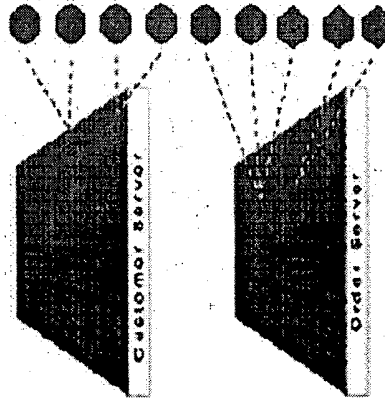


Figure 1: Three-tiered architecture

Human Interface



Operations
(Web Service operations,
database stored procedures,
etc.)



Shared Business Logic

Shared Data Tables

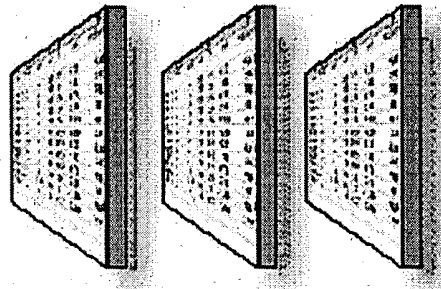


Figure 2: Orders table

Orders				
	Custnum	Onum	OrderDate	ShipDate

Figure 3a: Application Browser Application Dictionary Explorer window

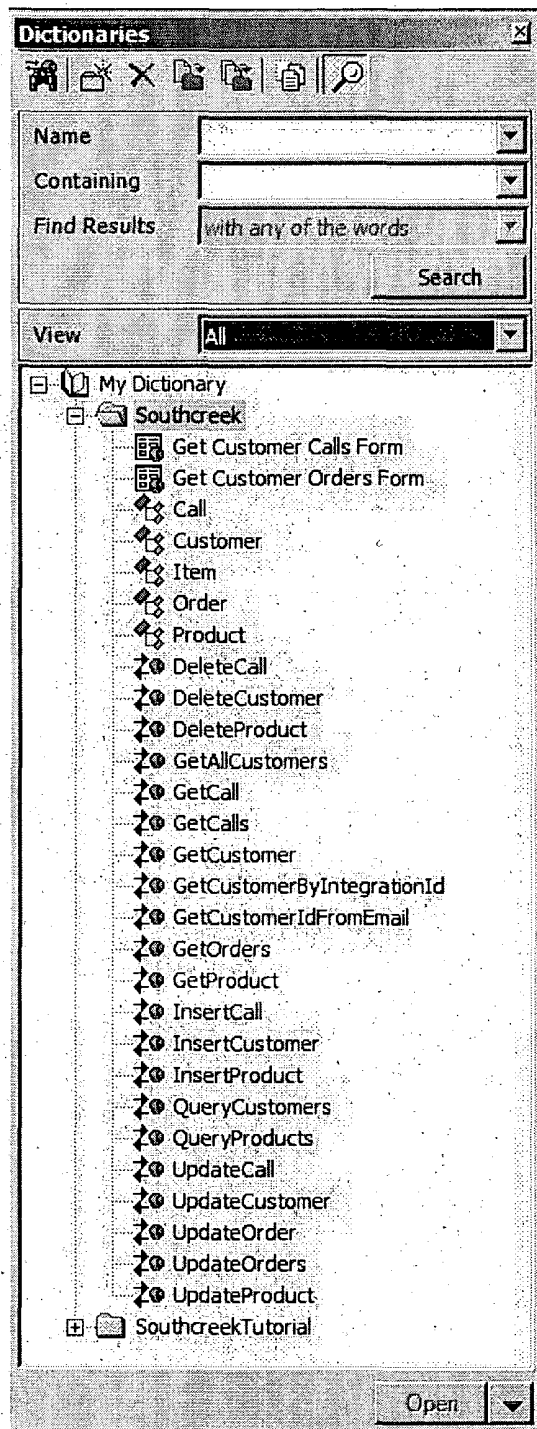


Figure 3b: Search results

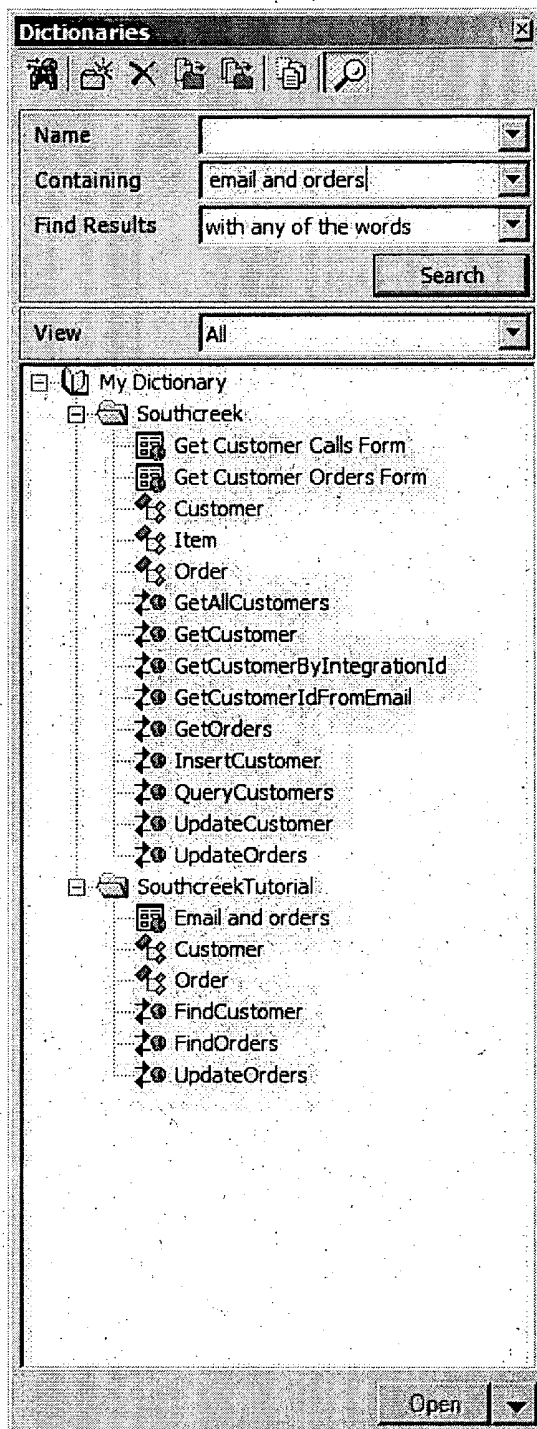


Figure 4: FindCustomer form, automatically rendered

The image shows a Windows-style dialog box titled "Form6". It contains four text input fields stacked vertically, each with a label to its left. The first field is labeled "EMailAddress" and contains the text "gp@idea.com". The second field is labeled "CNumber" and contains the text "11". The third field is labeled "FirstName" and contains the text "G". The fourth field is labeled "LastName" and contains the text "P". At the bottom of the dialog box, there are three buttons: "FindCustomer", "Execute", and "Cancel". The "FindCustomer" button is highlighted with a darker background.

EMailAddress	gp@idea.com
CNumber	11
FirstName	G
LastName	P

FindCustomer Execute Cancel

Figure 5a: FindCustomers and Find Orders operation, with Join Mode tool tip visible

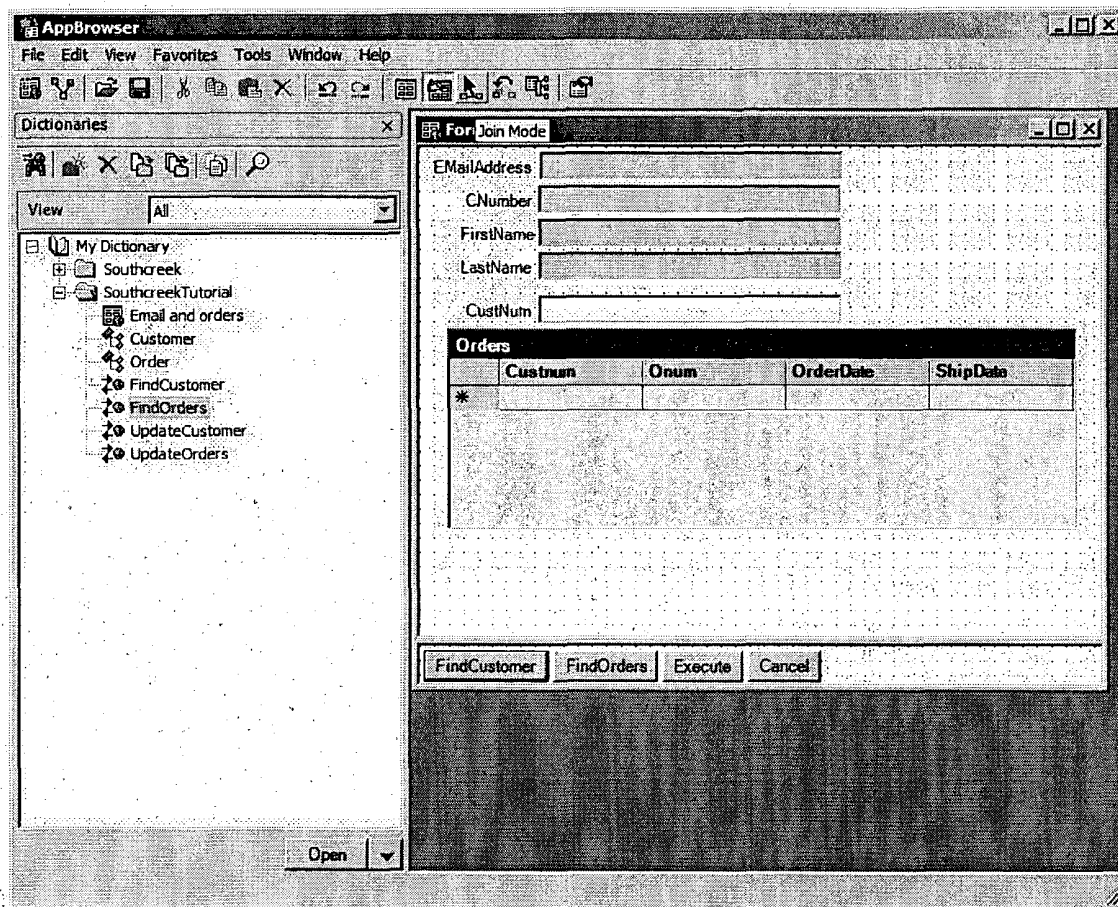


Figure 5b: FindCustomer and Find Orders operations joined

The screenshot shows a software window titled "Form1" with a grid background. It contains several input fields and a table.

Input fields:

- EMailAddress
- CNumber
- FirstName
- LastName
- CustNum

Arrows indicate a sequence of operations: a vertical arrow on the right side of the first four fields points downwards, and a horizontal arrow points from the CNumber field to the CustNum field.

Table titled "Orders":

	Custnum	Onum	OrderDate	ShipDate
*				

Buttons at the bottom:

- FindCustomer
- FindOrders
- Execute
- Cancel

Figure 5c: Join Toolbox

Join Toolbox

Join (CNumberTextBox.OnValueChanged)

Rename

Add

Delete

Join Definition

Primary Object

Customer

Related Object

Order

Operation

FindOrders

Join Fields

Customer.CNumber -> FindOrders.Inputs.CustNum

Edit Join Fields

Triggers

Customer.CNumber

Add

Delete

Description

Dictionaries

JoinToolbox

Figure 6: Form Modeler

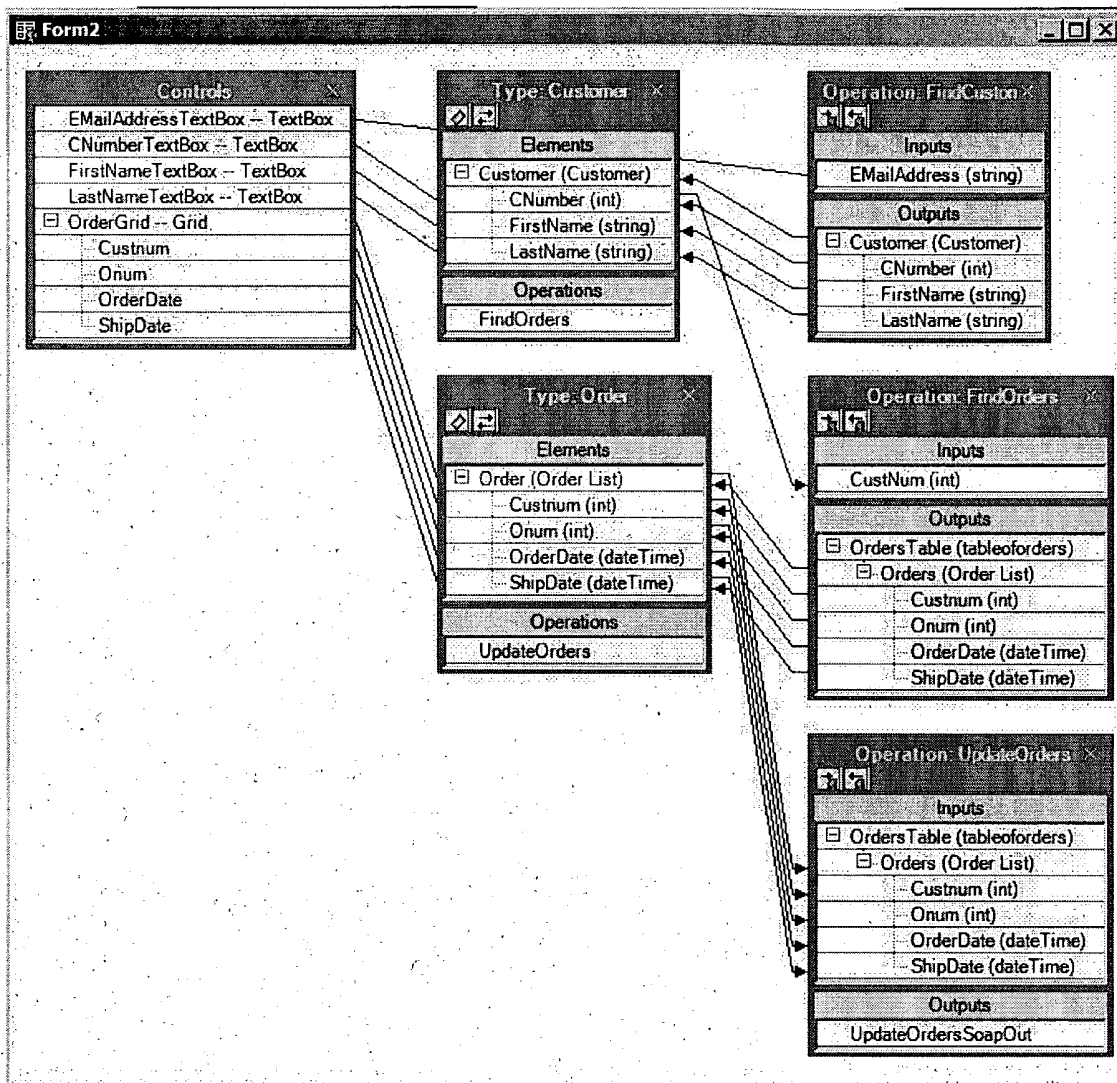


Figure 7a: Blank form, now joined

[illegible]

Figure 7b: Type in a value and put the cursor over the Execute button

Form1

EMailAddress: gp@idea.com

CNumber:

FirstName:

LastName:

CustNum:

Orders			
Custnum	Onum	OrderDate	ShipDate

FindCustomer FindOrders Execute Cancel

Figure 7c: Show post-Execute results

Form1

EMailAddress gp@idea.com

CNumber 11

FirstName G

LastName P

CustNum 11

Orders				
	Custnum	Onum	OrderDate	ShipDate
▶	11	681	3/5/2001 10:00 P	3/6/2000 10:00 P
	11	1475	2/1/2001 10:00 P	2/5/2001 10:00 P
	11	1486	2/1/2000 10:00 P	2/2/2000 10:00 P
	11	2342	6/5/2000 10:00 P	6/6/2000 10:00 P

FindCustomer FindOrders Execute Cancel

Figure 8a: Return to Design mode and add the UpdateOrders operation to the form

Form1

EMailAddress

CNumber

FirstName

LastName

CustNum

Orders				
	Custnum	Onum	OrderDate	ShipDate
*				

Orders				
	Custnum	Onum	OrderDate	ShipDate
*				

FindCustomer FindOrders UpdateOrders Execute Cancel

Figure 8b: Merge mode, with tool tip visible

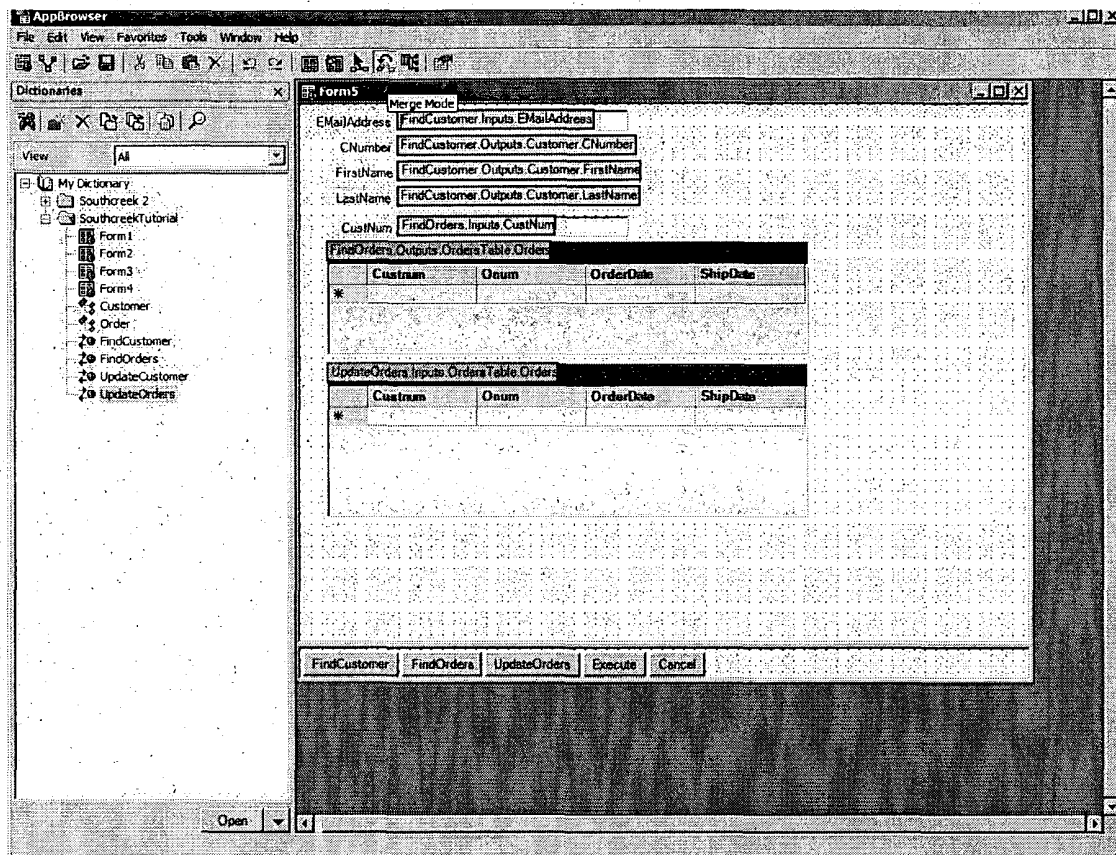


Figure 8c: Merge the Orders tables by dragging and dropping

The screenshot shows a software window titled "Form5" with a grid background. It contains several input fields and two identical table components.

Input fields and their values:

- EMailAddress: FindCustomer.Inputs.EMailAddress
- CNumber: FindCustomer.Outputs.Customer.CNumber
- FirstName: FindCustomer.Outputs.Customer.FirstName
- LastName: FindCustomer.Outputs.Customer.LastName
- CustNum: FindOrders.Inputs.CustNum

Table 1: FindOrders.Outputs.OrdersTable.Orders

	Custnum	Onum	OrderDate	ShipDate
*				

Table 2: FindOrders.Outputs.OrdersTable.Orders

	Custnum	Onum	OrderDate	ShipDate
*				

Buttons at the bottom: FindCustomer, FindOrders, UpdateOrders, Execute, Cancel

Figure 8d: The populated Order table, with merged operations

Form2

EMailAddress: gp@idea.com

CNumber: 11

FirstName: G

LastName: P

	Custnum	Onum	OrderDate	ShipDate
▶	11	681	3/5/2001 10:00 P	3/6/2000 10:00 P
	11	1475	2/1/2001 10:00 P	2/5/2001 10:00 P
	11	1486	2/1/2000 10:00 P	2/2/2000 10:00 P
	11	2342	6/5/2000 10:00 P	6/6/2000 10:00 P

FindCustomer UpdateOrders Execute Cancel

Figure 9a: Enterprise Object Type Editor, Elements tab

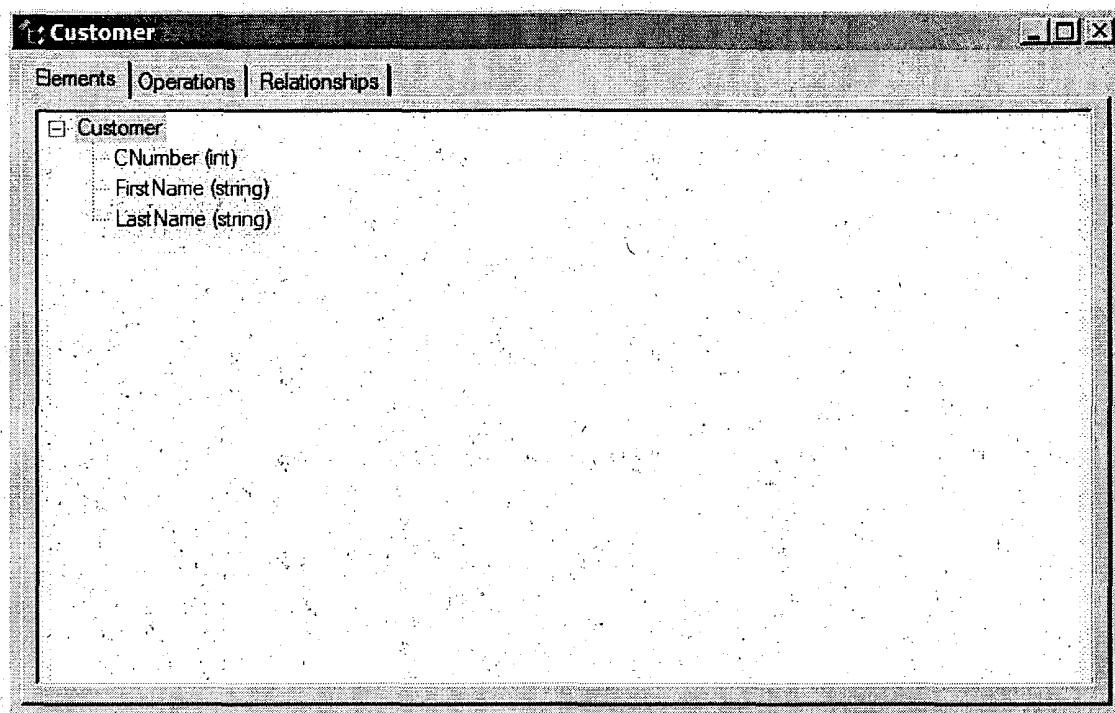


Figure 9b: Enterprise Object Type Editor, Operations tab

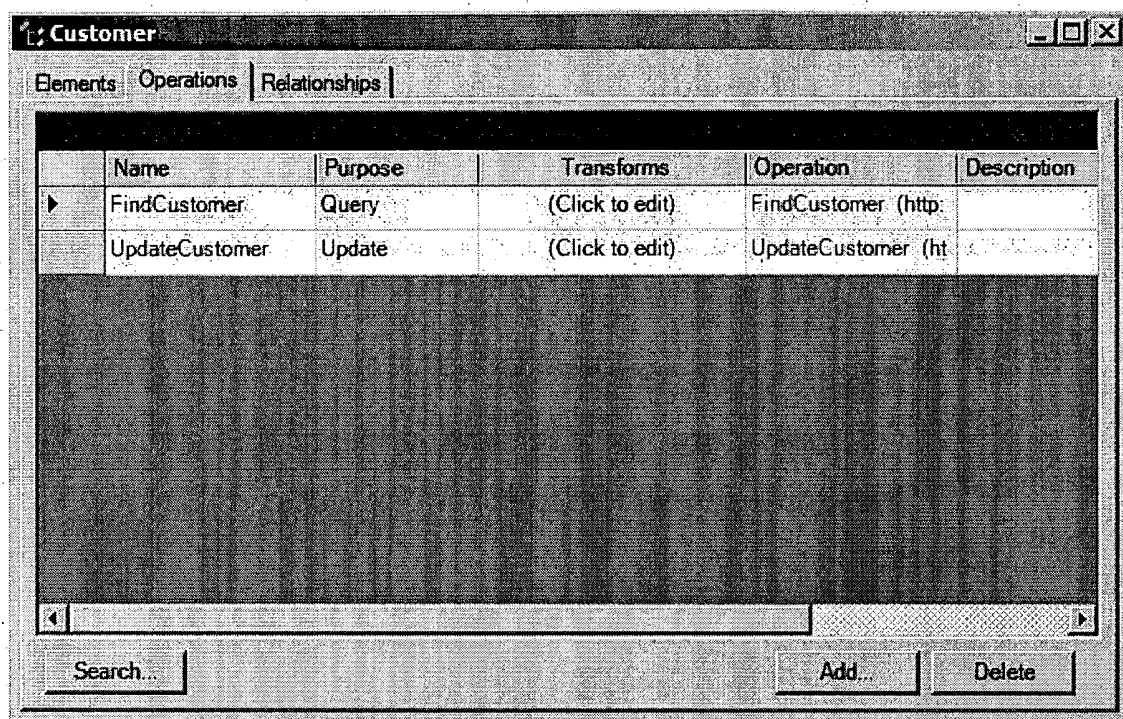


Figure 9c: Enterprise Object Type Editor, Relationships tab

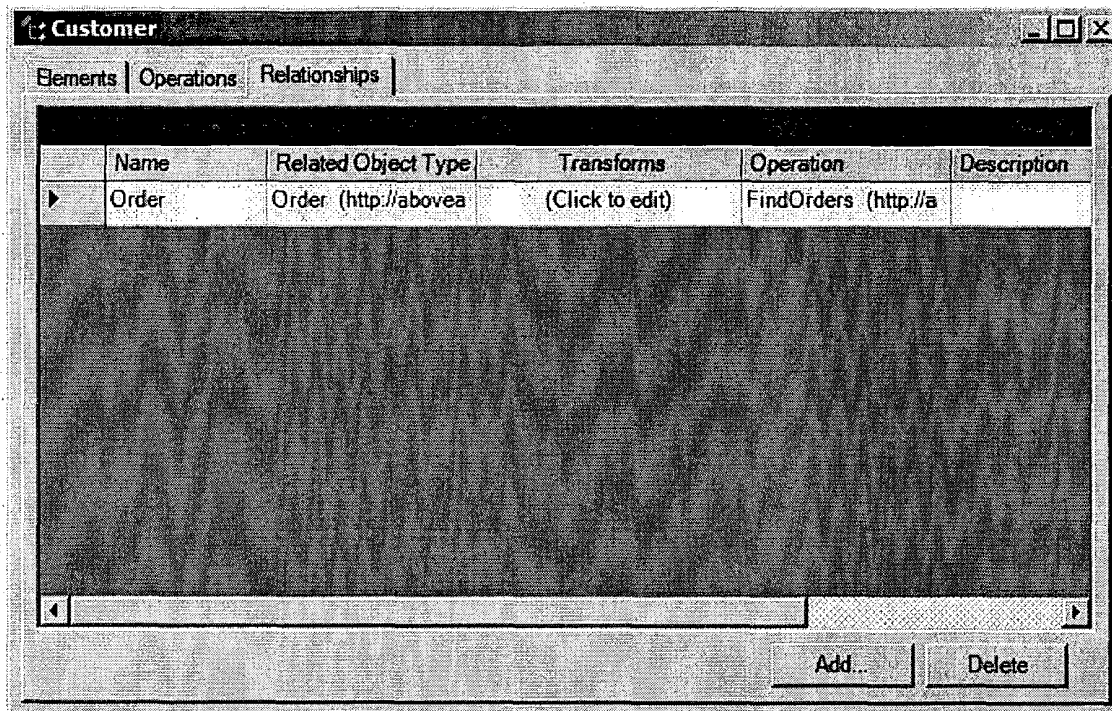


Figure 10a: Form Wizard, Step 1: Choose the Object Types to include on the form

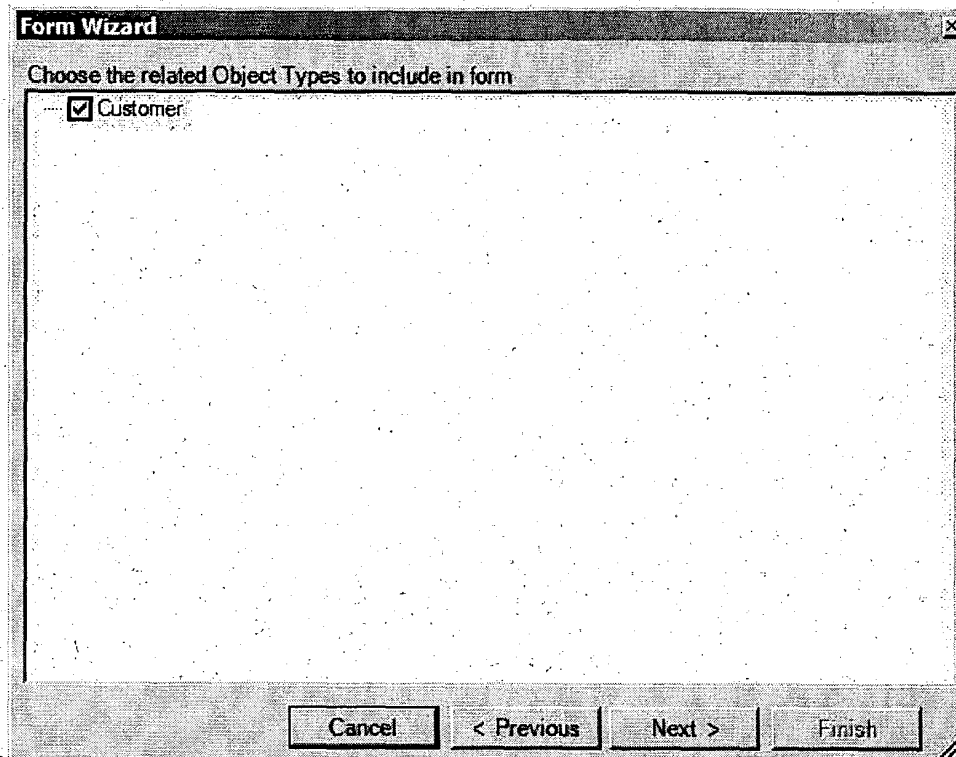


Figure 10b: Form Wizard, Step 2: Choose the operations for the form

Form Wizard

For each Object Type, choose the Operations to make available in this form

- ☒ Customer
 - ☒ FindCustomer (Query)
 - ☐ UpdateCustomer (Update)

Buttons: Cancel, < Previous, Next >, Finish, Select All, Clear All

Figure 10c: Form Wizard, Step 3: Select layout options and finish the form

Form Wizard

Button Style

- ☐ Buttons for Query, Insert Delete and Update style transaction forms
- ☒ "Prepare" button for each operation plus a single Execute button
- ☐ Invoke button per operation

Layout Styles

	Name	Table	Fields
▶	Customer	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Cancel < Previous Next > Finish

10d: Completed form results from the Form Wizard

The image shows a screenshot of a Windows application window titled "Form5". The window contains four text input fields stacked vertically, each with a label to its left: "EMailAddress", "CNumber", "FirstName", and "LastName". Below these fields is a large, empty rectangular area. At the bottom of the window, there is a horizontal bar containing three buttons: "FindCustomer", "Execute", and "Cancel". The window has a standard Windows title bar with minimize, maximize, and close buttons on the right.

Figure11a: Add a Relationship to an EOT

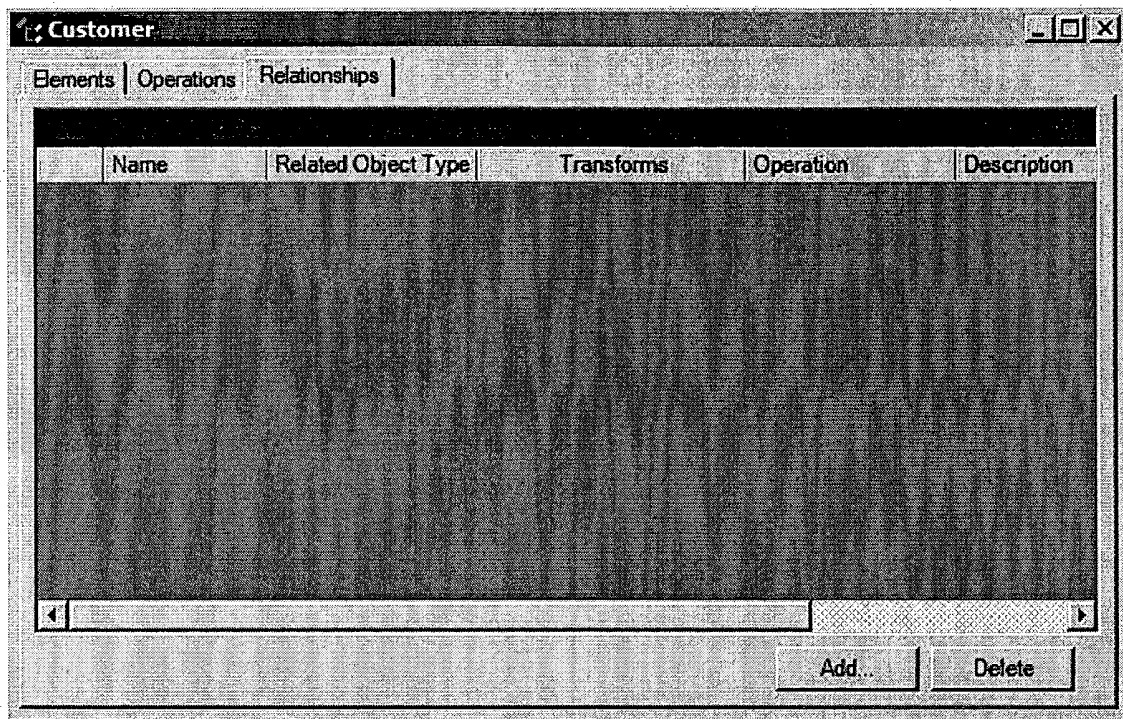


Figure 11b: Choose the EOT to relate

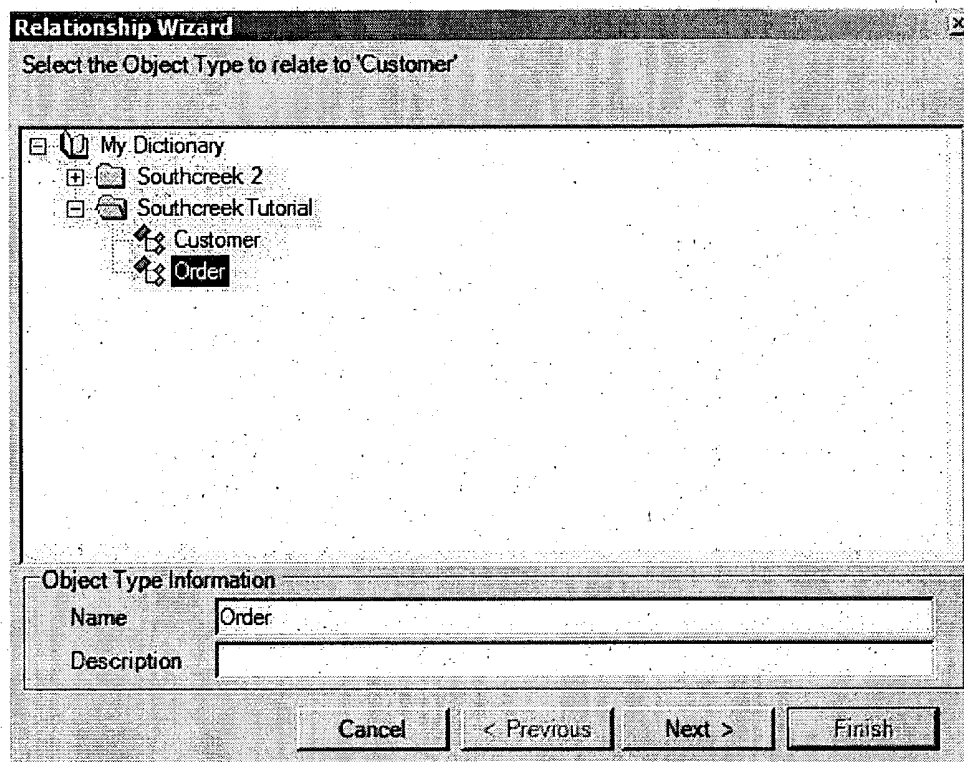


Figure 11c: Select the operation used to create the relationship

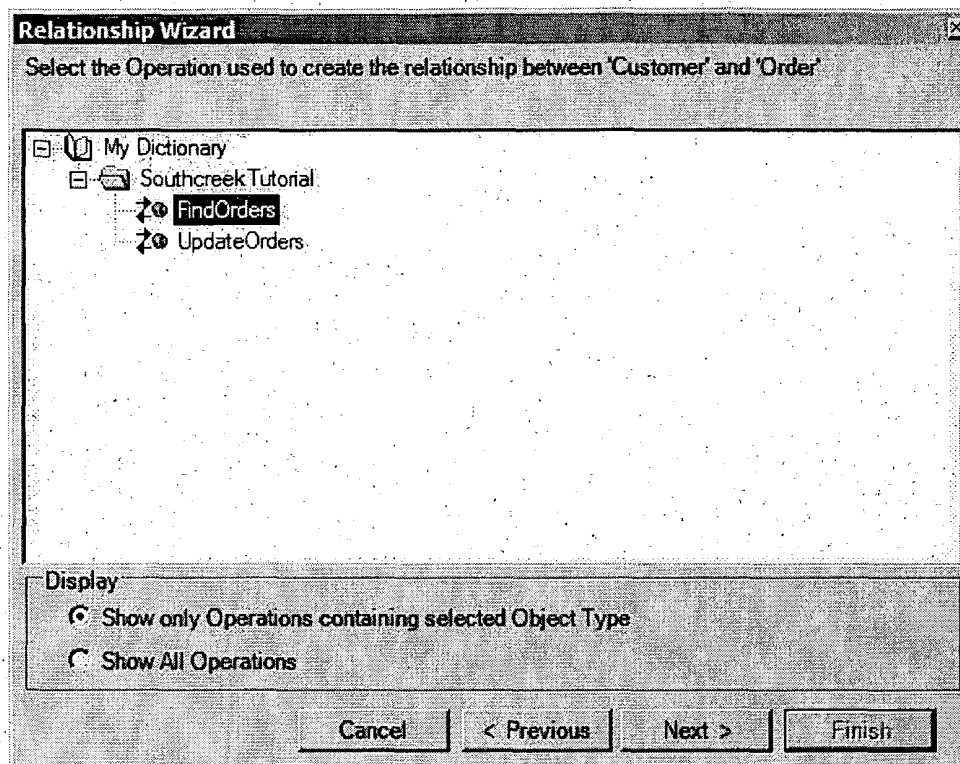


Figure 11d: Edit the Transforms

The screenshot shows a 'Relationship Wizard' dialog box with a title bar containing a close button. The main text area contains the following instructions:

Relationships use transforms that:

- (1) bind the source Object Type to the input of an Operation, and
- (2) bind the related Object Type to the output of the same Operation.

The following transforms have been generated. Please evaluate and correct any incomplete transforms.

Transforms

Input Transform - binds 'Customer' to the input of 'FindOrders'

(none)

Output Transform - binds 'Order' to the output of 'FindOrders'

Orders Table.Orders -> dataSet.Order

At the bottom right of the transform list is an 'Edit Transforms' button. At the bottom of the dialog are four buttons: 'Cancel', '< Previous', 'Next >', and 'Finish'.

11e: Transforms window

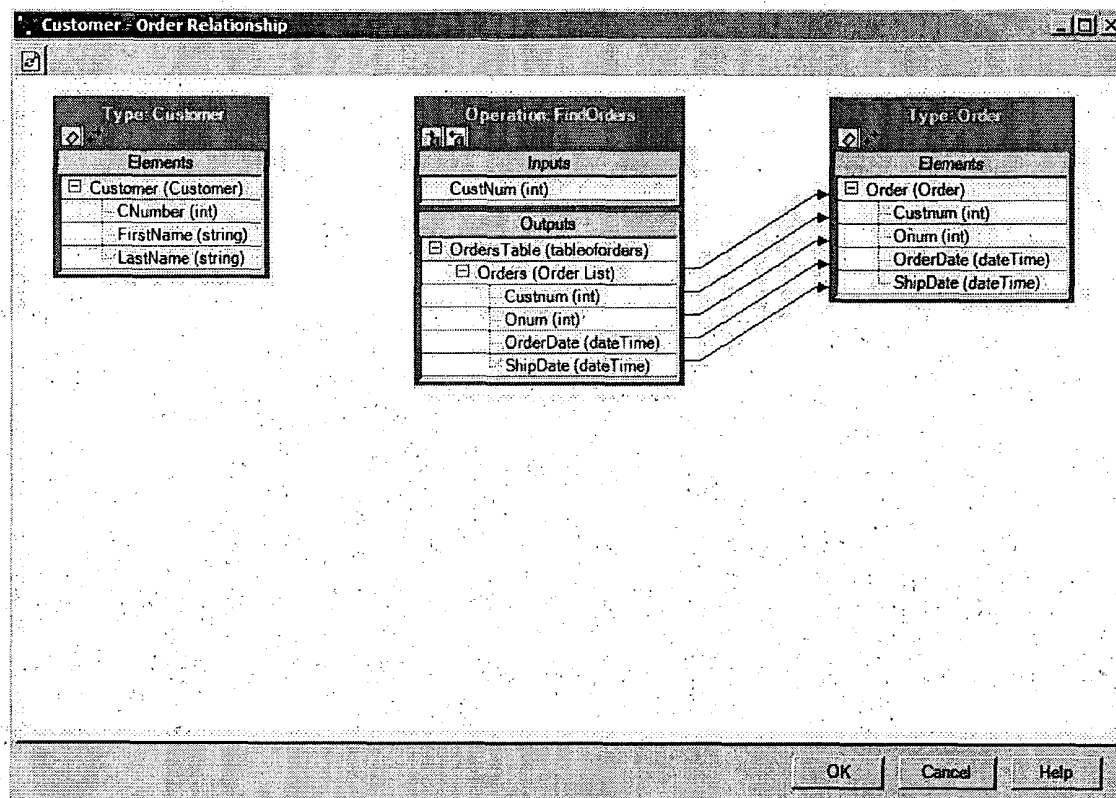


Figure 11f: Transforms completed

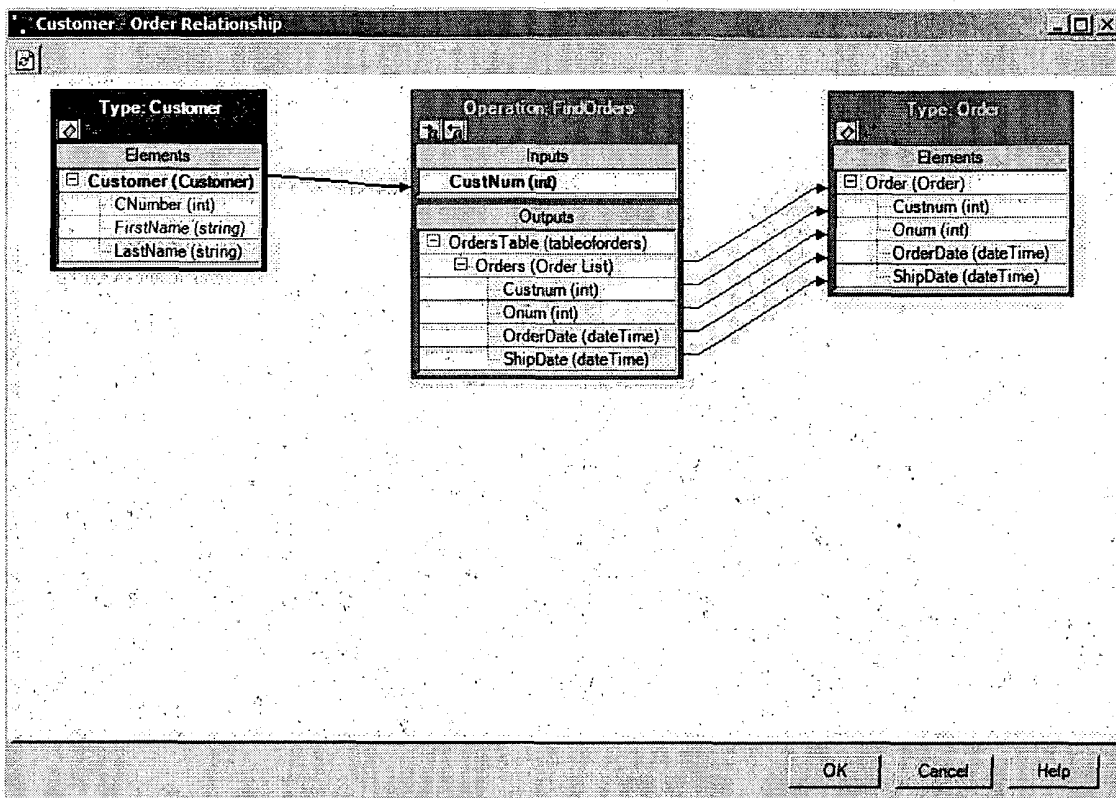


Figure12a: Create a form with a Relationship Join Using the Form Wizard

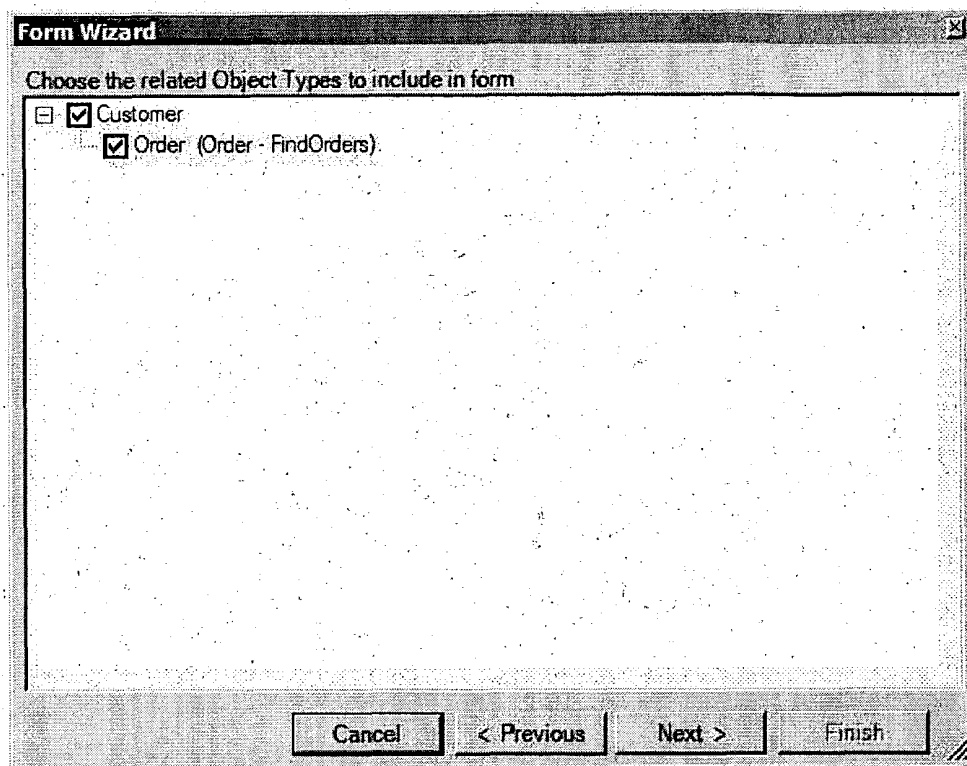


Figure12b: Choose the operations for the form

The image shows a 'Form Wizard' dialog box with a title bar containing a close button. The main instruction reads: 'For each Object Type, choose the Operations to make available in this form'. Below this, there are two expandable sections. The first section, 'Customer', is expanded and contains two items: 'FindCustomer (Query)' with a checked checkbox and 'UpdateCustomer (Update)' with an unchecked checkbox. The second section, 'Order (Order - FindOrders)', is also expanded and contains one item: 'UpdateOrders (Update)' with an unchecked checkbox. At the bottom of the dialog, there are four buttons: 'Cancel', '< Previous', 'Next >', and 'Finish'. Above the 'Next >' button, there are two additional buttons: 'Select All' and 'Clear All'.

Form Wizard

For each Object Type, choose the Operations to make available in this form

- ☒ FindCustomer (Query)
- ☐ UpdateCustomer (Update)
- ☐ Order (Order - FindOrders)
 - ☐ UpdateOrders (Update)

Cancel < Previous Next > Finish

Select All Clear All

Figure12c: Select layout options and finish the form

Form Wizard

Button Style

☐ Buttons for Query, Insert Delete and Update style transaction forms

☒ "Prepare" button for each operation plus a single Execute button

☐ Invoke button per operation

Layout Styles

	Name	Table	Fields
▶	Customer	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Customer/Order (List)	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Cancel < Previous Next > Finish

Figure 12d: Form Created with a Relationship Join using the Form Wizard

Form1

EmailAddress

CNumber

FirstName

LastName

CustNum

Orders			
Custnum	Onum	OrderDate	ShipDate

FindCustomer FindOrders Execute Cancel

Figure 13a: Enterprise Modeler showing Customer and Order icons, without Customer expanded

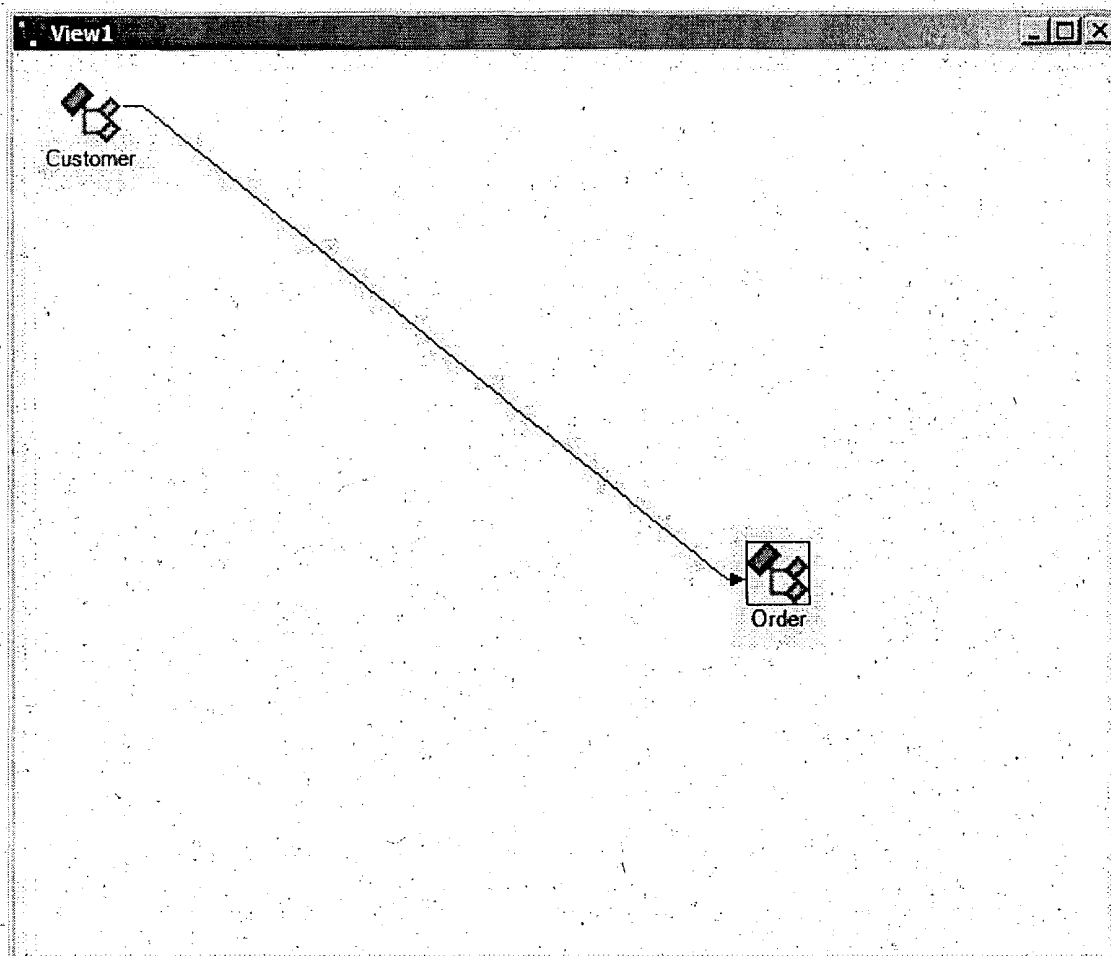


Figure 13b: Enterprise Modeler showing Customer and Order icons, with Customer expanded to show Relationships

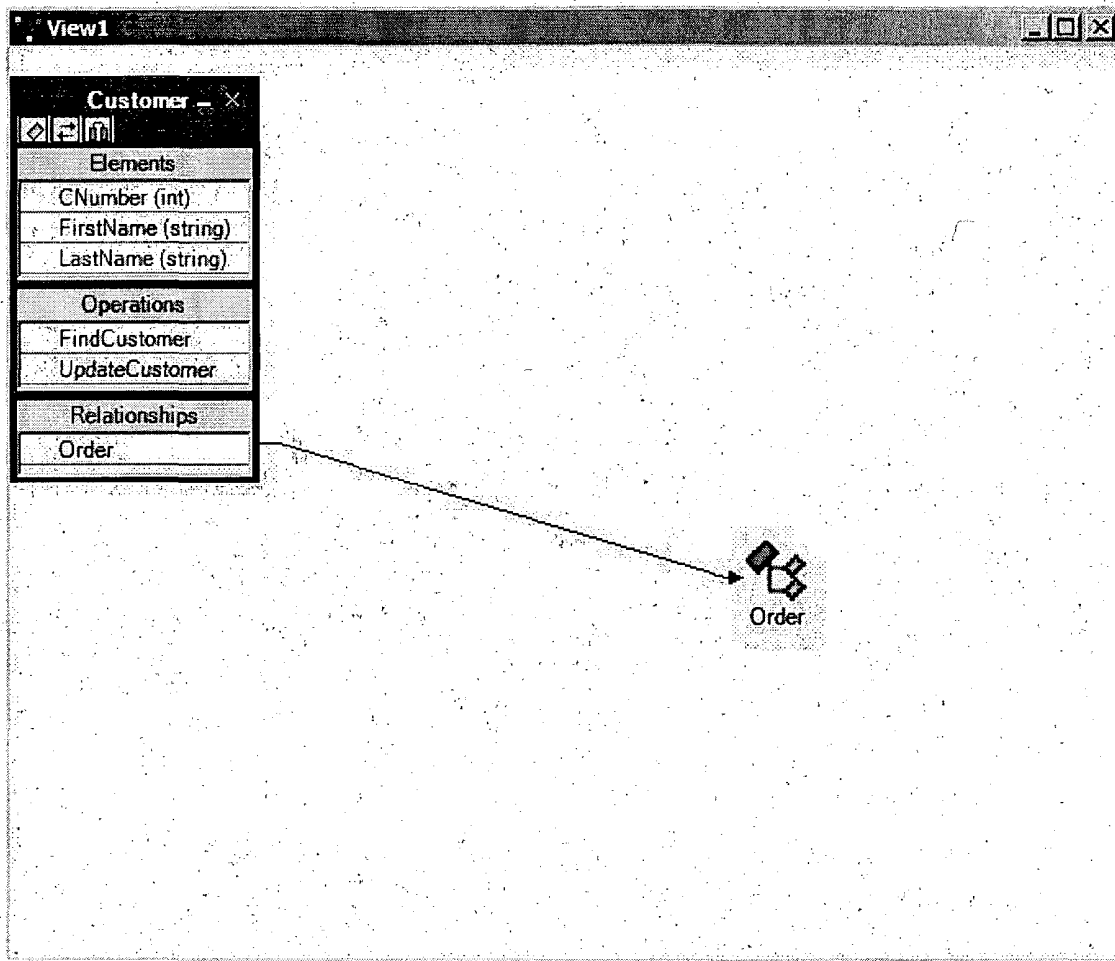


Figure 13c: Enterprise Modeler showing more complex relationships, including line labels

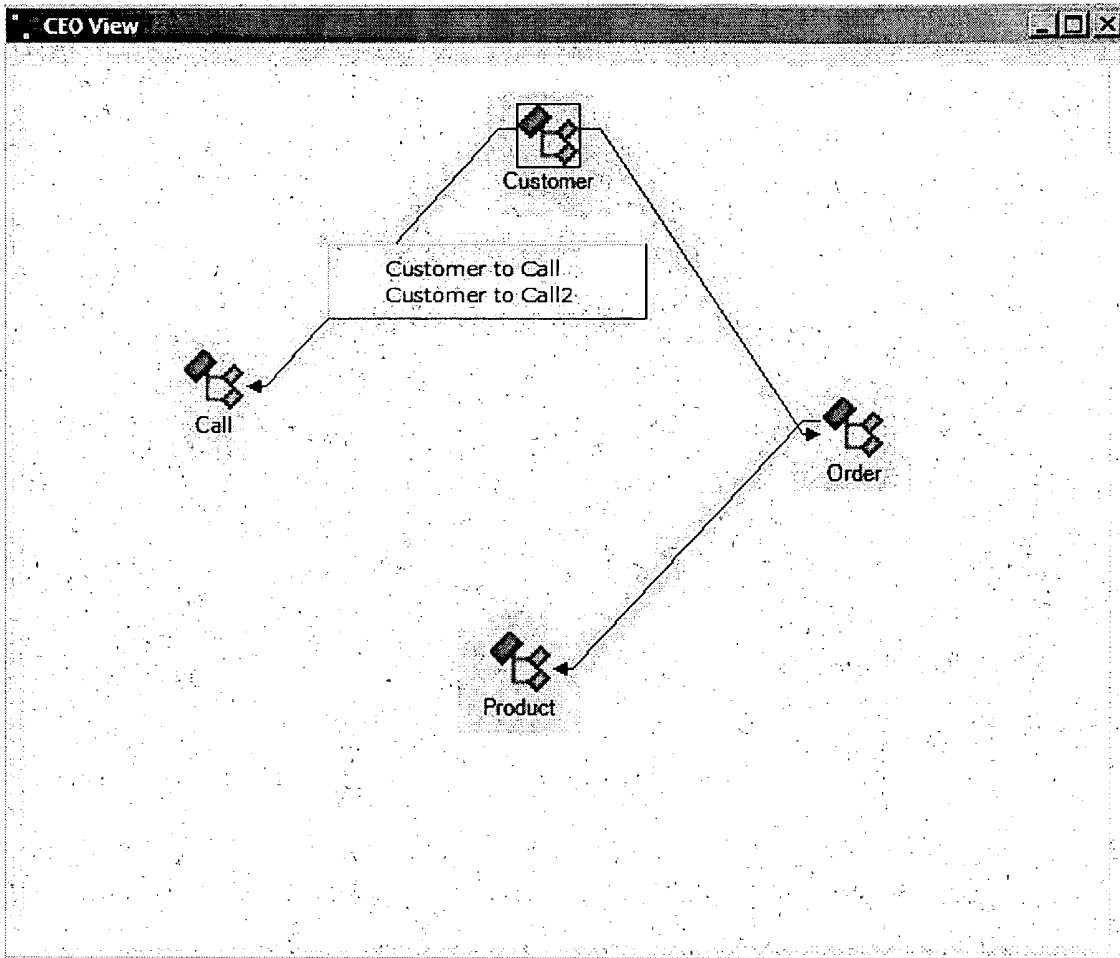


Figure 13d: Enterprise Modeler showing Customer, Call, and Order EOTs, with Customer expanded to show Relationships

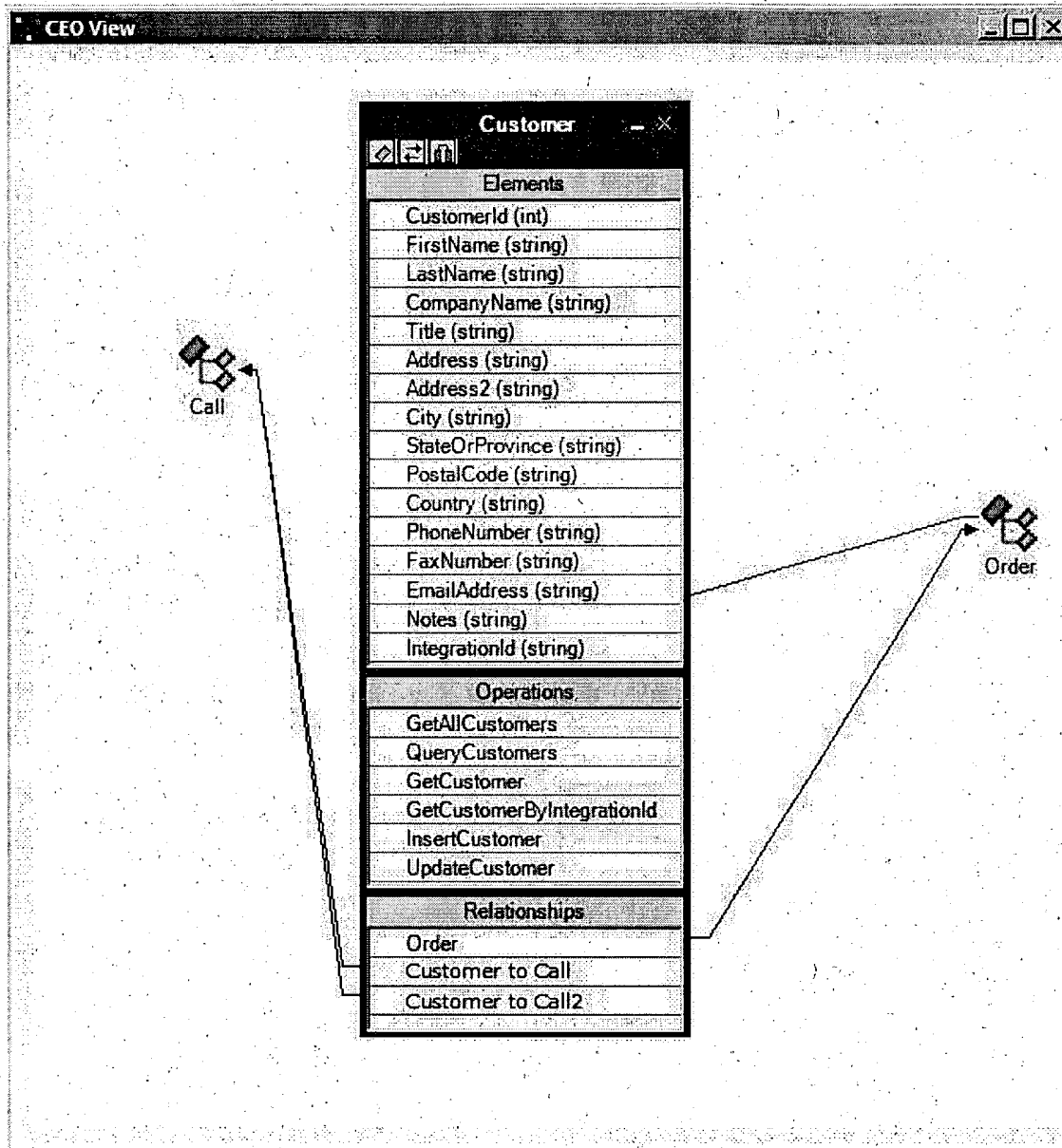


Figure 13e: Relationships panel

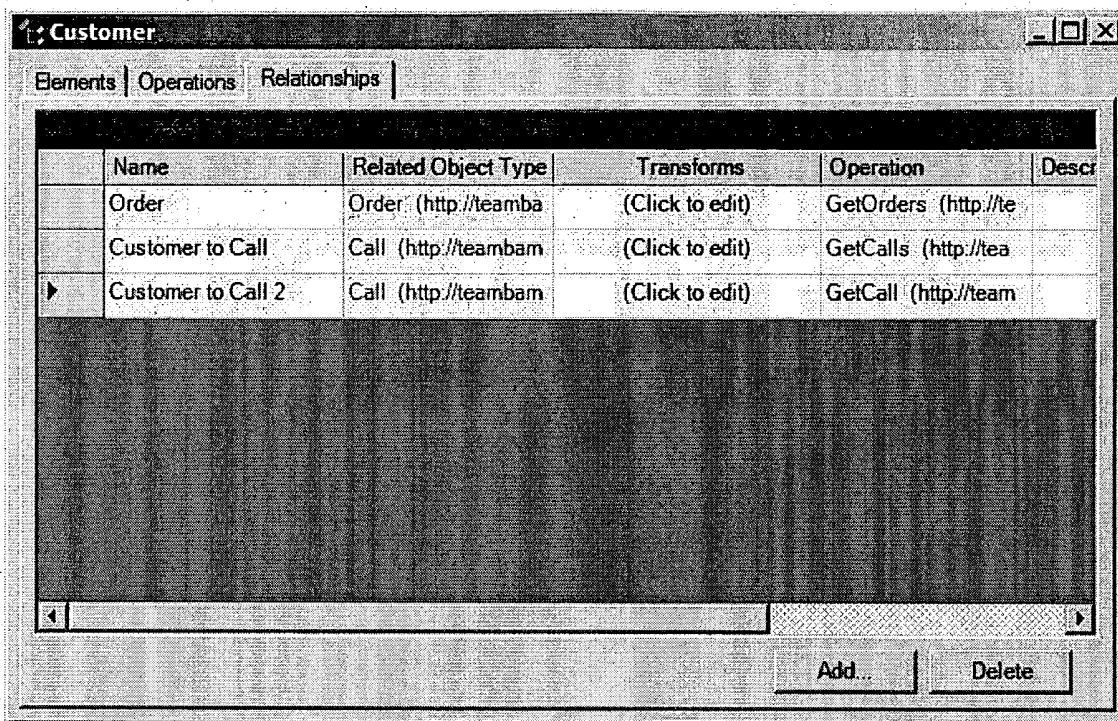


Figure 14: Schematic diagram of network

